HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, Colorado 80527-2400

2154

PATENT APPLICATION

ATTORNEY DOCKET NO. 10010480-1

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Larry N. McMahan, et al. **Confirmation No.:** 1256

Application No.: 09/842,969 **Examiner:** Ramsey Refai

Filing Date: April 25, 2001 **Group Art Unit:** 2154

Title: ALLOCATING COMPUTER RESOURCES FOR EFFICIENT USE BY A PROGRAM

Mail Stop Appeal Brief-Patents
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Sir:

Transmitted herewith is the Substitute Appeal Brief in this application with respect to the Notice of Appeal filed on 05/12/2005 and subsequent Notice dated 9/28/2005.

The fee for filing this Appeal Brief is (37 CFR 1.17(c)) $500.00.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

( ) (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d) for the total number of months checked below:

( )	one month	$120.00
( )	two months	$450.00
( )	three months	$1020.00
( )	four months	$1590.00

( ) The extension fee has already been filled in this application.

(X) (b) Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account **08-2025** the sum of _____. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees. A duplicate copy of this sheet is enclosed.

(X) I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Alexandria, VA 22313-1450. Date of Deposit: 10/14/2005

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Typed Name: Sarah L. Reinhard

Signature: Sarah L. Reinhard

Respectfully submitted,

Larry N. McMahan, et al.

By _____

Edward J. Brooks III

Attorney/Agent for Applicant(s)
Reg. No. **40,925**

Date: **10/14/2005**

Telephone No.: **(612) 236-0120**

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, Colorado 80527-2400

Docket No.: 10010480-1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:		
Larry N. McMahan		
Application No.: 09/842,969		Confirmation No.: 1256
Filed: April 25, 2001		Art Unit: 2154
For: Allocating Computer Resources For Efficient Use By A Program		Examiner: Ramsey Refai

APPELLANTS' BRIEF – SUBSTITUE BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This brief, in compliance with 37 C.F.R. § 41.37, is in furtherance of the Notice of Appeal filed in this case on May 12, 2005.

The fees required under § 41.20(b)(2) and any required petition for extension of time for filing this brief and fees therefore are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief contains items under the following headings as required by 37 C.F.R. § 41.37:

I. Real Party In Interest

II. Related Appeals and Interferences

III. Status of Claims

IV. Status of Amendments

V. Summary of Claimed Subject Matter

VI. Grounds of Rejection to be Reviewed on Appeal

VII. Argument

VIII. Claims Appendix

IX. Evidence Appendix

X. Related Proceedings Appendix

The final page of this brief bears the attorney's signature.

I. REAL PARTY IN INTEREST

The real party in interest for this appeal is Hewlett-Packard Development Company, L.L.P., a Texas limited liability partnership having its principal place of business in Houston, Texas.

II. RELATED APPEALS AND INTERFERENCES

Appellant is unaware of any related appeal or interference.

III. STATUS OF CLAIMS

A. Total Number of Claims in the Application: 31 claims, which are identified as claims 1-31.

B. Current Status of Claims

1. Claims canceled: 4
2. Claims withdrawn from consideration but not canceled: None
3. Claims pending: 1-3, 5-31
4. Claims allowed: None
5. Claims rejected: 1-3, 5-31

C. Claims on Appeal: 1-3, 5-31

IV. STATUS OF AMENDMENTS

Appellant filed a Response After Final Rejection on April 12, 2005 (hereinafter "Final Response") without any amendment to the claims. The Examiner responded to the Final Response with an Advisory Action mailed April 29, 2005, in which the Examiner stated that Appellant's "request for reconsideration has been considered but does NOT place the application in condition for allowance."

V. SUMMARY OF CLAIMED SUBJECT MATTER

Embodiments of the invention provide techniques for allocating computer resources for use by a program. As an example, computer resources include I/O devices (first-resource type) and memory arrays (second-resource type). A method embodiment in accordance with claim 1 allocates an I/O device and a memory array wherein a distance from the memory array to the I/O device is the shortest distance among the distances between the allocated I/O device to the memory arrays (page 5, lines 2-6; page 8, lines 13-24). The allocated I/O device and memory array are to be assigned to a program (page 8, lines 13-15). Further, the distance between the I/O devices and memory arrays is stored as firmware, and upon power-up, the operating system is provided with the distance between the I/O devices and memory arrays to allocate the I/O device and the memory array (page 3, lines 13-16; page 6, lines 9-13; page 10, lines 5-9; and page 11, lines 4-10).

Claim 2 is a dependent claim to independent claim 1 that recites that the distance between the computer resources is selected from a group consisting of the distance measured from one resource to another resource and the distance measured relative to a distance used as a reference (page 9, line 22 – page 10, line 4).

Claim 3 is a dependent claim to claim 2 that recites that the distance between computer resources is measured in time units (page 9, line 24-25).

Claim 5 is a dependent claim to independent claim 1 that recites the distance between the computer resources is measured by the distance between nodes containing the resources (page 9, lines 22-23).

Claim 6 is a dependent claim to independent claim 1 that recites that the distance between the computer resources is provided by the time taken to communicate from one resource to another resource or the time taken to transfer data from one resource to another resource (page 8, line 17-20).

Claim 7 is a dependent claim to independent claim 1 that recites the computer resources reside in a plurality of nodes each of which includes at least one resource being either an I/O device, a memory device, or a processor (page 7, lines 8-13; and page 9, lines 22-23).

Claim 8 is a dependent claim on claim 7 that recites the resources in a node are on a same bus or share a point-to-point link (page 5, lines 3-6; and page 8, lines 1-4).

Claim 9 is a dependent claim to independent claim 1 that recites that the first resource is an input device associated with a storage device storing the program or storing data associated with the program (page 9, lines 9-11).

Claim 10 is a dependent claim to independent claim 1 that comprises the step of allocating a third resource of a third-resource type based on the shortest distance between the first resource to resources of the third-resource type; or the shortest distance between the second resource and the resources of the third-resource type (page 9, lines 1-19).

In an additional embodiment, claim 11 provides a system where an I/O device and a memory array are selected based on a plurality of distances including distances between a plurality of I/O devices to a plurality of memory arrays, where the plurality of distances are stored as firmware and provided to an operating system at power-up for use in selecting the I/O device and the memory array (page 3, lines 13-16; page 5, lines 2-6; page 6, lines 9-13; page 8, lines 13-24; page 10, lines 5-9; and page 11, lines 4-10).

Claim 12 is a dependent claim to independent claim 11 that recites that the plurality of distances are selected from a group consisting of the distance measured from one resource to another resource and the distance measured relative to a distance used as a reference (page 9, line 22 – page 10, line 4).

Claim 13 is a dependent claim to independent claim 11 that recites the distance between the computer resources is measured by the distance between nodes containing the resources (page 9, lines 22-23).

Claim 14 is a dependent claim to independent claim 11 that recites that the plurality of distances are measured in time units (page 8, line 17-20).

Claim 15 is a dependent claim to claim 14 that recites measured time units are provided by the time taken to communicate from one resource to another resource or the time taken to transfer data from one resource to another resource (page 8, line 17-20).

Claim 16 is a dependent claim to independent claim 11 that recites the computer resources reside in a plurality of nodes each of which includes at least one resource being either an I/O device, a memory device, or a processor (page 7, lines 8-13; and page 9, lines 22-23).

Claim 17 is a dependent claim on claim 16 that recites the resources in a node are on a same bus or share a point-to-point link (page 5, lines 3-6; and page 8, lines 1-4).

Claim 18 is a dependent claim to independent claim 11 that recites the distance between the first resource and the second resource is the shortest distance among the distances between a plurality of first-type resources to a plurality of second-type resources (page 8, lines 16-24).

Claim 19 is a dependent claim to independent claim 11 that recites a third resource of a third resource type that is selected based on the shortest distance between the first resource to a plurality of third-type resources; or the shortest distance between the second resource to the plurality of third-type resources (page 9, lines 1-19).

In a further embodiment, claim 20 provides a computer-readable medium embodying instructions (page 5, line 23 – page 6, line 13) that perform the method recited in claim 1, above.

In another embodiment, claim 21 provides a method for allocating computer resources that comprise the steps recite in both claims 1 and 18, above.

In an additional embodiment, claim 22 provides a system that includes firmware embodying distances between resources including a plurality of I/O devices, a plurality of memory, and a plurality of processors, the resources residing in a plurality of resource nodes (page 3, lines 9-16). The system also includes an operating system where upon power-up of the system, the operating system uses the distances in the firmware to allocate an I/O device, a memory device, and a processor for use by a program, where a distance between the I/O device to the memory device is the shortest distance among distances between the plurality of I/O devices to the plurality of memory devices, a distance between the I/O device to the processor is the shortest distance among distances between the plurality of I/O devices to the plurality of processors, and a distance between the memory device to the processor is the shortest distance among distances between the plurality of memory devices to the plurality of processors (page 6, lines 9-13, page 8, line 13-24; page 9, lines 1-19).

In a further embodiment, claim 23 provides a system that includes a plurality of nodes having resources, an operating system running on a processor in a node of the plurality of nodes, firmware embodying relative distances between the plurality of nodes, where upon power-up, the operating system uses the relative distances between

the plurality of nodes in the firmware to allocate resources to be used by a program (page 3, lines 9-16; page 6, lines 9-13, page 8, line 13-24; page 9, lines 1-19).

Claim 24 is a dependent claim to independent claim 23 that recites an interconnect fabric connecting the plurality of nodes; the interconnect fabric includes node-controller chips and cross-bar chips wherein a node-controller chip connects at least one I/O controller, one memory controller, a plurality of processors and a plurality of crossbar chips; and a crossbar chip, on a first side, connects to at least a node controller chip, and, on a second side, connects to at least either a crossbar chip or another interconnect chip (page 5, lines 1-6; page 6, line 16 – page 7 line 5).

Claim 25 is a dependent claim to independent claim 23 that recites that a node of the plurality of nodes includes a node-controller chip connecting at least an I/O controller, a memory controller, a processor, and another node (page 6, line 20 – page 7, line 5).

Claim 26 is a dependent claim to independent claim 23 that recites that a node of the plurality of nodes includes one or a combination of one or more of an I/O controller connected to I/O devices, a memory controller connected to memory arrays, and one or more processors (page 7, lines 8-13).

Claim 27 is a dependent claim to independent claim 23 that recites that a node of the plurality of nodes includes a bus connecting an I/O controller connected to I/O devices, a memory controller connected to memory arrays, a plurality of processors, and a bridge connecting to another node of the plurality of nodes (page 7, line 8 – page 8, line 10).

Claim 28 is a dependent claim to independent claim 23 that recites that an I/O device is first allocated, then a memory array is allocated; a distance between the memory array to the I/O device is the shortest distance among a plurality of distances between a plurality of memory arrays to the I/O device (page 8, line 13 – page 9, line 11).

Claim 29 is a dependent claim to claim 28 that recites that a processor is allocated; a distance between the processor to the I/O device is the shortest distance among a plurality of distances between a plurality of processors to the I/O device (page 8, line 13 – page 9, line 11).

Claim 30 is a dependent claim to claim 28 that recites that a processor is allocated; a distance between the processor to the memory array is the shortest

distance among a plurality of distances between a plurality of processors to the memory array (page 8, line 13 – page 9, line 11).

Claim 31 is a dependent claim to independent claim 1 that recites that the first resource is an I/O device connected to a storage device storing the program or storing data associated with the program (page 7, lines 8-13).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The first issue is whether claims 1-3, 5-23, and 26-31 are unpatentable under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,606,643 B1 issued to Emens et al. (hereinafter "Emens") in view of U.S. Patent No. 6,732,264 B1 issued to Sun et al (hereinafter "Sun").

The second issue is whether claims 24 and 25 are unpatentable under 35 U.S.C. § 103(a) as unpatentable over Emens in view of Sun and in further view of U.S. Patent No. 6,724,757 B1 issued to Zadikian et al (hereinafter "Zadikian").

VII. ARGUMENT

REJECTIONS UNDER 35 U.S.C. § 103(e) – Emens and Sun

In paragraph 3, page 2, of the Final Office Action, claims 1-3, 5-23, and 26-31 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Emens in view of Sun. As indicated in the Final Response and it is hereby submitted that Emens and Sun, either alone or in combination, do not teach every element of the claimed inventions. The alleged motivation for combining Emens and Sun is improper. Showing a prima facie case of obviousness fails.

1) Emens and Sun, either alone or in combination, do not teach every element of the claimed inventions

a) Emens does not teach that the claimed first resource and second resource are to be assigned to a program

The Final Office Action corresponded the claimed "first resource" to Emens' client computer 10 and the claimed "second resource" to Emens' mirror server 16-24

(Final Office Action, page 3, continuation of paragraph 4). However, Emens does not teach, suggest, or make obvious that Emens' client computer 10 and servers 16-24 are "allocated to be assigned to a program" as in claim 1. In Emens, the mirror server is selected for the "*client computer* requesting web content . . ." (Abstract, emphasis added). For the claimed invention to be parallel with Emens, the claimed second resource (Emens' mirror server) must be selected for the claimed first resource (Emens' client computer), which is not true in the claimed invention. In fact, in the claimed invention, *both the first resource and the second resources* are "allocated to be assigned to a program," which is not disclosed, suggested, or made obvious by Emens.

Emens' cited paragraph of column 7, lines 35-67 discloses that the client computer includes a browser application interface, a distribution manager, a calibration manager, and multiple calibration applets that correspond to mirror servers on a list of possible mirror servers. The browser application interface interacts directly with the external world, the distribution manager and calibration manager program modules. This cited paragraph then discloses responsibility of those program modules. Further, this cited paragraph discloses that the host server program includes a query manager and a mirror server manager, and also discloses the responsibility of these managers. Even though this paragraph discloses a method of selecting a mirror server for client-host interaction, there is nothing parallel to the claimed "the first resource and the second resource are allocated to be assigned to a program" because there is no disclosure that the client computer and the mirror server are allocated to be assigned to a program.

Emens' cited paragraph of column 3, lines 28-37 discloses that the invention of Emens includes software technology intended to be embedded within the client computer web-browser program and a host server program that responds to initial client computer request. When a client computer tries to access a uniform resource locator address, the information request is sent to a central host server computer to which the internet protocol address corresponding to the URL. Again, there is nothing in this cited paragraph of Emens that is patentably parallel to the claimed "the first resource and the second resource are allocated to be assigned to a program" because there is no disclosure that Emens' client computer and mirror server are allocated to be assigned to a program.

In paragraph 3, section "Continuation of 11," page 2, the Advisory Action indicated that "[t]he first resource being resources on the client computer and the second resource is memory located on the optimum mirror server (Figure 2) using program modules, browser application interface, and distribution/calibration managers (column 7, lines 35-67)." Here, the Advisory Action corresponded the claimed first resource to resources on the client computer and the claimed second resource to memory located on the optimum mirror server, which is contradictory to the Final Office Action that corresponded the claimed first resource to the client computer and the claimed second resource to the mirror server. For the sake of argument that if resources on the client computer correspond to the claimed first resource and memory located on the optimum server corresponds to the claimed second resource, then, to be parallel to claim 1, Emens must disclose selecting the resources on the client computer and selecting the memory located on the optimum server. Apparently, Emens does not disclose those facts, but discloses selecting an optimal mirror server or a mirror server that has the best response time for a given client computer requesting web content (the title, the Abstract, etc.).

For the foregoing reasons, Emens does not teach the claimed element that "the first resource and the second resource are allocated to be assigned to a program."

b) Sun does not teach the claimed element that the system firmware stores the distance between the computer resources

Sun does not provide the missing elements in Emens discussed above. Even though, as the Final Office Action correctly asserted that, Sun discusses "the system firmware that includes program code know [sic] as BIOS, which contains boot code used when the system is reset or powered on" and that "BIOS boot code also contains hardware configuration and resources tables that contain lists of resources," Sun does not teach, suggest, or make obvious that the system firmware stores the claimed *distance between the computer resources*.

The Advisory Action, paragraph 4 of page 2, reasserted that "Sun shows the use of firmware that includes BIOS program which can contain hardware configuration and resource tables that contain list of resources . . . ." As can be seen, Sun does not disclose that system firmware stores the *distance* between computer resources. Hardware configuration and resource tables that contain list of resources in Sun are patentably distinguished from the claimed distance between the computer resources.

c) Sun does not teach the claimed element that "upon power-up, an operating system is provided, from the firmware, with the distances between the computer resources for use in allocating the first resource and the second resource"

Because Sun does not teach that the system firmware stores the distance between the computer resources, Sun cannot teach that an operating system is provided, from the firmware, with the distances between the computer resources. Similarly, Sun cannot teach using the distance between the computer resources to allocate the first resource and the second resource, and Sun cannot teach such allocation is done at power up.

Using the example given in the Summary of the invention, Sun does not teach, suggest, or make obvious that the system firmware stores the distance between the I/O devices and the memory arrays, and at power-up, the distances between the I/O devices and memory arrays are used to locate the allocated I/O device and memory array so that they are to be assigned to a program.

For the foregoing reasons, Emens and Sun, either alone or in combination, do not teach every element of claim 1.

2) The alleged motivation for combining Emens and Sun is improper. Showing a prima facie case of obviousness fails

The Final Office Action, in paragraph 6, page 5, asserted that "[i]t would have been obvious . . . to combine the teachings of Emens . . . and Sun . . . because Sun et al's use of firmware and providing an operating system with data from firmware in Emens et al's method would decrease the processing time of an information request sent by a client by allowing the client computer to obtain a previously stored list of the nearest server upon startup from firmware without the need to re-query each server among the mirror servers to locate the nearest server." The Advisory Action, paragraph 2 of page 2, repeated this assertion. The Advisory Action also stated that ". . . obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found in the references themselves or in the knowledge generally available to one of ordinary skill in the art . . . ." However, the Advisory Action, like the Final Office Action, failed to show any teaching or suggestion in Emens or Sun for Emens to acquire the nearest mirror server at power-

up. There is not any suggestion in either Emens or Sun to combine the method of selecting a mirror server in Emens and firmware booting for computers in Sun. There is no teaching or suggestion in either Emens or Sun regarding using the distance between the computer resources stored in firmware to allocate the first and the second resource at power-up. It is not of common knowledge to combine two fields of Emens and Sun, either. The Final Office Action's and the Advisory Action's assertion regarding decreasing the processing time of an information request sent by a client by allowing the client computer to obtain a previously stored list of the nearest server upon startup from firmware without the need to re-query each server among the mirror servers to locate the nearest server is a general conclusory statement without providing concrete evidence. The assertion is at best a statement relying on hindsight, which is impermissible. As a result, the alleged motivation for combining Emens and Sun is improper, and showing a prima facie case of obviousness fails.

For the foregoing reasons, claim 1 is patentably distinguished from Emens and Sun, either alone or in combination, and is therefore patentable.

Claims 2-10 excluding canceled claim 4 depend directly or indirectly from claim 1, and are therefore patentable for at least the same reasons as claim 1. Claims 2-10 are also patentable for their additional limitations.

Regarding claim 2, even though Emens discusses the response time from the mirror server to the client computer, neither Emens nor Sun teaches the claimed feature that the distance between the computer resources is a distance measured from one resource to another resource or a distance measured relative to a distance used as a reference.

Regarding claim 5, Emens and Sun do not teach the concept of "nodes" and therefore cannot disclose that the distance between the computer resources is measured by the distance between nodes containing the resources. The Final Office Action, paragraph 9, page 4, cited Emens' column 3, lines 28-58, Abstract, and column 4, lines 7-25. In these cited paragraphs, there is no disclosure regarding nodes containing the client computer or the mirror server (the claimed resources).

Regarding claim 6, even though Emens discloses the response time from the mirror server to the client computer, Emens does not disclose that the distance between the computer resources is provided by the time taken to transfer data from one resource to another resource.

Regarding claim 7, Emens does not disclose the concept of "nodes" and thus cannot disclose a node including at least one resource being either an I/O device, a memory device, or a processor, which, as claimed, is allocated to be assigned to a program. In rejecting claim 7, the Office Action, paragraph 11 of page 4, cited Emens' Abstract, column 3, lines 46-58, and mirror servers. As discussed in relation to claim 5, Emens does not teach the concept of nodes having resources to be assigned to a program. Emens does not disclose a node having at least one resource being either an I/O device, a memory device, or a processor.

Regarding claim 8, Emens does not disclose that the resources in a node are on a same bus or share a point-to-point link. In paragraph 12, page 5, the cited figure 2 shows the client computer and the mirror servers (the claimed resources) are connected to the Internet, but does not show that the resources *in a node* are on a same bus or share a point-to-point link, as in the claimed invention.

Regarding claim 9, Emens does not disclose that the first resource is an input device associated with a storage device storing the program or storing data associated with the program. As discussed above, Emens does not disclose the program to which the first resource and the second resource are to be assigned. Emens' client computer, which is corresponded to the first resource is not an input device associated with a storage device storing the claimed program or storing data associated with the claimed program. In paragraph 13 of the Office Action, the cited paragraph of column 7, lines 35-54 discloses the "Client-side Program," which has no bearing on the claimed element in claim 9.

Regarding claim 10 in paragraph 14, page 5, Emens's cited paragraph of column 11, line 40 to column 12, line 6, does not disclose allocating a third resource of a third-resource type (e.g., a resource different from client computer 10 or mirror servers 16-24), and thus cannot disclose the shortest distance between the first resource or the second resource to the resources of the third-resource type.

In paragraph 15 of the Final Office Action, claims 11-20 were rejected under the same rationale as claims 1-3 and 5-10.

However, claim 11 includes the limitation that "the first resource and second resource are selected based on a plurality of distances including *distances between a plurality of first-type resources* to *a plurality of second-type resources*" (emphasis added), which is not disclosed in Emens. As an illustration, to be parallel with claim 11, Emens must disclose that the client computer and the mirror server are selected

based on a plurality of distances including distances between the client computers to the mirror servers. Emens does not disclose the distances between the client computers. Therefore, Emens cannot disclose the distances between the client computers to the mirrors server, and therefore cannot disclose selecting the client computer and the mirror servers based on those distances.

The Advisory Action, paragraph 5 of page 2, asserted that "Emens teaches an address list . . . . The first resource is on the client computer and the second is on the mirror server (. . ., element 36, . . .) . . . . Multiple clients can include multiple resources located on each client (column 11, lines 55-60). Here, again the Advisory Action contradicted with the Final Office Action wherein the Advisory Action corresponded the claimed first resource to what is on the client computer and the claimed second resource to what is on the mirror server. Nevertheless, Emens does not disclose selecting those resources based on a plurality of distances including distances between a plurality of first-type resources to a plurality of second-type resources as in the claimed invention. Arguments related to claim 1 in relation to the distances stored in firmware, the operating system uses theses distances to select the first resource and second resource are applicable to claim 11.

For the foregoing, claim 11 is patentably distinguished from Emens and Sun, either alone or in combination, and is therefore patentable.

Claims 12-19 depend directly or indirectly from claim 11 and are therefore patentable for at least the same reasons as claim 11. Claims 12-19 are also patentable for their additional limitations.

Discussions in relation to claims 2, 5, 3, 6, 7, 8 and 10 are applicable to claims 12, 13, 14, 15, 16, 17, and 19, respectively.

Claim 18 recites the limitation "wherein the distance between the firs resource and the second resource is the shortest distance among the distances between a plurality of first-type resources to a plurality of second-type resources," which is not disclosed in Emens because Emens does not disclose the distances between a plurality of client computers to a plurality of mirror servers.

Claim 20 recites limitations corresponding to claim 1 and is therefore patentable for at least the same reasons as claim 1.

Claim 21 recites the limitation corresponding to that of claim 18 and recites "a distance between the first resource and the second resource is the shortest distance among the distances between the plurality of first resources to the plurality of second

resources." Therefore, claim 21 is patentable for at least this limitation. Discussion related to the first resource and second resource are allocated to be used by a program, distances between the computer resources are stored as firmware, upon power-up, etc., in relation to claim 1 are applicable to claim 21. As a result, claim 21 is patentable for at least these limitations.

Regarding claim 22, even though Emens discusses the response time from the mirror server to the client computer, Emens does not disclose the distance between the I/O device to the memory device, the distance between the I/O device to the processor, the distance between the memory device to the processor. Emens does not disclose that "a distance between the I/O device to the memory device is the shortest distance among distances between the plurality of I/O devices to the plurality of memory devices," " a distance between the I/O device to the processor is the shortest distance among distances between the plurality of I/O devices to the plurality of processors," "a distance between the memory device to the processor is the shortest distance among distances between the plurality of memory devices to the plurality of processors."

Even though, as the Office Action correctly asserted that, Sun discusses "the system firmware that includes program code know [sic] as BIOS, which contains boot code used when the system is reset or powered on" and that "BIOS boot code also contains hardware configuration and resources tables that contain lists of resources," Sun does not teach, suggest, or make obvious the claimed invention in which the "firmware embodying distances between resources including a plurality of I/O devices, a plurality of memory, and a plurality of processors; the resources residing in a plurality of resource nodes."

For the foregoing reasons, Emens and Sun, either alone or in combination, do not disclose, suggest, or make obvious every element of claim 22. As discussed above in relation to claim 1, the alleged motivation for combining Emens and Sun is improper. Showing a prima facie case of obviousness fails. As a result, claim 22 is patentably distinguished from Emens and Sun, either alone or in combination, and is therefore patentable.

Regarding claim 23, Emens does not teach, suggest, or make obvious the concept of "nodes" which include resources to be allocated. The Final Office Action corresponded a claimed node to a mirror server. The Final Office Action then corresponded Emens' figure 2 and element 12 to the claimed element that an

operating system running on a processor in a node of the plurality of nodes. In effect, the Final Office Action corresponded this host server 12 to a claimed node. However, there is no teaching in Emens regarding allocating resources in the mirror server or host server 12. Further, Emens does not teach the concept of relative distances between the plurality of nodes, either. In the embodiment illustrated in the Specification, page 9, line 25 to page 11, line 10, relative distance is discussed, including reciting relative distances as distances measured relative to a distance used as a reference. Discussion related to firmware storing distances, using the distances at power up to allocate resources in relation to claim 1 are also applicable here. Therefore, claim 23 is patentably distinguished from Emens and Sun, either alone or in combination.

Claims 24-31 depend directly or indirectly from claim 23 and are therefore patentable for the same reasons as claim 23. They are also patentable for their additional limitations.

Regarding claim 26, Emens does not disclose allocating resources in a node wherein a node includes one or a combination of one or more of an I/O controller connected to I/O devices, a memory controller connected to memory arrays, and one or more processors. Further, these I/O controllers and memory controllers are connected to I/O devices and memory arrays, which are not disclosed in Emens.

Regarding claim 27, Emens does not teach the claimed node that includes a bus connecting an I/O controller, a memory controller, a plurality of processors, and a bridge, etc. The cited figure 2 shows an Internet connection (col. 7, line 4-5), which is patentably distinguished from the claimed node.

Regarding claim 28-30, the cited Abstract and column 3, line 37 to column 4, line 25 discuss the method of selecting a server wherein the host server sends a list of IP addresses; each IP address corresponding to an available mirror server. The client computer, via applets, then initiates multiple threads each of which corresponds to a received IP address. Subsequently, each of the applets sends mirror server requests to the designated IP address of the mirror servers. In turn, the mirror servers each send a response back to the client computer. Each applet then measures the round trip latency. The process is repeated for a number of times and a running average of round trip latency is maintained. The applet with the lowest roundtrip latency is identified as the winner, and the browser connects with the replica mirror server site corresponding to the winner's associated IP address. These cited paragraphs, as can

be seen, do not disclose the claimed feature that "an I/O device is first allocated, then a memory array is allocated; a distance between the memory array to the I/O device is the shortest distance among a plurality of distances between a plurality of memory arrays to the I/O devices," or "a processor is allocated; a distance between the processor to the I/O device is the shortest distance among a plurality of distances between a plurality of processors to the I/O device," or "a processor is allocated; a distance between the processors to the memory array is the shortest distance among a plurality of distances between a plurality of processors to the memory array." Even though Emens discloses software incorporating the process steps and each of the software portions comprises a computer program that may be stored on a program storage device, Emens does not disclose the claimed first resource being an I/O device connected to a storage device storing the program or storing data associated with the program. The claimed program uses the first resource allocated for the claimed program, which is not disclosed in Emens.

REJECTIONS UNDER 35 U.S.C. § 103 – Emens, Sun, and Zadikian

In paragraph 31, page 10, of the Final Office Action, claims 24 and 25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Emens in view Sun and in further view of U.S patent number 6,732,264 issued to Zadikian et al ("Zadikian").

As indicated in the Final Response and it is hereby resubmitted that Emens, Sun, and Zadikian, either alone or in combination, do not teach every element of the claims 24 and 25. The alleged motivation for combing Emens, Sun, and Zakikian is improper. Showing a prima facie case of obviousness fails.

Claims 24 and 25 depend from claim 23 and are therefore patentable for at least the same reasons as claim 23. Claims 24-25 are also patentable for their additional limitations. Zadikian does not provide the limitations being missed in Emens and Sun. Therefore, claims 24 and 25 are patentably distinguished from Emens, Sun, and Zadikian, either alone or in combination.

Regarding claim 24, Zadikian's cited paragraph of column 3, lines 35-40 discloses two links, each having three paths and the switching fabric that supports the six possible combinations. Zadikian's cited paragraph of column 16, lines 10-28 illustrates the switching matrix using the crossbars and the switching matrix with input and output signals, but does not disclose the claimed element that "a node-controller chip connects at least one I/O controller, one memory controller, a plurality of

processors and a plurality of crossbar chips; and a crossbar chip, on a first side, connects to at least a node controller chip, and, on a second side, connects to at least either a crossbar chip or another interconnect chip."

Regarding claim 25, even though Zadikian teaches the use of a switching fabric that supports six combinations of connections, a node controller that contains routing protocols, and the use of a crossbar device, Zadikian does not disclose the claimed node that includes a node-controller chip connecting at least an I/O controller, a memory controller, and processor, and another node.

The Final Office Action, paragraph 35, page 11, asserted that "[i]t would have been obvious . . . to combine the teachings of Emens et al, Sun et al, and Zadikian et al because Zadikian et al's use of an interconnect fabric, node controller, and crossbar in Emens et al and Sun et al's system would have provided a system that can route information from node to another on a network." This assertion is a general conclusory statement without providing supporting evidence. As discussed above, the alleged motivation for combining Emens and Sun fails. Further, there is not any teaching or suggestion to combine the routing of Zadikian and the selection of a mirror server in Emens or the routing of Sun. It is not a common knowledge to combine the teachings, either.

For the foregoing reasons, claims 24 and 25 are patentably distinguished from Emens, Sun, and Zadikian, either alone or in combination, and is therefore patentable.

The Examiner is invited to telephone Applicant's attorney **Tuan V. Ngo at (408) 447-8133** with regard to this matter.

CERTIFICATE UNDER 37 CFR §1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: MS Appeal Brief – Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Date of Deposit: 10/14/05

Typed Name: Sarah L. Reinhard

Signature:

Respectfully Submitted,

By:

Edward J. Brooks III
Attorney for Appellant
Reg. No. 40,925

Date: 10/14/2005

Telephone No. (612) 236-0120

VIII. CLAIMS APPENDIX

Claims Involved in the Appeal of Application Serial No. 09/842,969

1. (Previously Presented) A method for allocating computer resources, comprising the steps of:

allocating a first resource of a first-resource type; and

allocating a second resource of a second-resource type different from the first-resource type;

wherein

a distance from the second resource to the first resource is the shortest distance among distances between the first resource to resources of the second-resource type;

the first resource and the second resource are allocated to be assigned to a program;

the distance between the computer resources is stored as firmware; and,

upon power-up, an operating system is provided, from the firmware, with the distances between the computer resources for use in allocating the first resource and the second resource.

2. (Previously Presented) The method of claim 1 wherein the distance between the computer resources is selected from a group consisting of:

a distance measured from one resource to another resource and

a distance measured relative to a distance used as a reference.

3. (Previously Presented) The method of claim 2 wherein the distance between the computer resources is measured in time units.

4. (Canceled)

5. (Previously Presented) The method of claim 1 wherein the distance between the computer resources is measured by the distance between nodes containing the resources.

6. (Previously Presented) The method of claim 1 wherein the distance between the computer resources is provided by the time taken to communicate from one resource to another resource or the time taken to transfer data from one resource to another resource.

7. (Previously Presented) The method of claim 1 wherein the computer resources reside in a plurality of nodes each of which includes at least one resource being either an I/O device, a memory device, or a processor.

8. (Original) The method of claim 7 wherein resources in a node are on a same bus or share a point-to-point link.

9. (Original) The method of claim 1 wherein the first resource is an input device associated with a storage device storing the program or storing data associated with the program.

10. (Previously Presented) The method of claim 1 further comprising the step of
allocating a third resource of a third-resource type based on
the shortest distance between the first resource to resources of the third-resource type; or
the shortest distance between the second resource and the resources of the third-resource type.

11. (Previously Presented) A system, comprising:
a first resource of a first resource type; and
a second resource of a second resource type;
wherein
the first resource and second resource are selected based on a plurality of distances including distances between a plurality of first-type resources to a plurality of second-type resources; and
the plurality of distances are stored as firmware and provided to an operating system at power-up for use in selecting the first resource and the second resource.

12. (Previously Presented) The system of claim 11 wherein the plurality of distances are selected from a group consisting of:
a distance measured from one resource to another resource, and
a distance measured relative to a distance used as a reference.

13. (Previously Presented) The system of claim 11 wherein the plurality of distances are measured by the distance between nodes containing the resources.

14. (Previously Presented) The system of claim 11 wherein the plurality of distances are measured in time units.

15. (Previously Presented) The system of claim 14 wherein the measured time units are provided by the time taken to communicate from one resource to another resource or the time taken to transfer data from one resource to another resource.

16. (Previously Presented) The system of claim 11 wherein resources including the first-type resources and the second-type resources reside in a plurality of nodes each of which includes at least one resource being either an I/O device, a memory device, or a processor.

17. (Original) The system of claim 16 wherein resources in a node are on a same bus or share a point-to-point link.

18. (Previously Presented) The system of claim 11 wherein the distance between the first resource and the second resource is the shortest distance among the distances between a plurality of first-type resources to a plurality of second-type resources.

19. (Previously Presented) The system of claim 11 further comprising a third resource of a third-resource type wherein the third resource is selected based on

the shortest distance between the first resource to a plurality of third-type resources; or

the shortest distance between the second resource to the plurality of third-type resources.

20. (Previously Presented) A computer-readable medium embodying instructions that perform a method for allocating computer resources, the method comprising the steps of:

allocating a first resource of a first-resource type; and

allocating a second resource of a second-resource type different from the first-resource type;

wherein

a distance from the second resource to the first resource is the shortest distance among distances between the first resource to resources of the second-resource type;

the first resource and the second resource are allocated to be assigned to a program;

the distance between the computer resources is stored as firmware; and,

upon power-up of a system running an operating system, the operating system is provided, from the firmware, with the distances between the computer resources to be used in allocating the first resource and the second resource.

21. (Previously Presented) A method for allocating computer resources, comprising the steps of:

providing a plurality of first resources of a first-resource type;

providing a plurality of second resources of a second-resource type different from the first-resource type;

allocating a first resource of the first resource type and a second resource of the second-resource type;

wherein

a distance between the first resource and the second resource is the shortest distance among the distances between the plurality of first resources to the plurality of second resources;

the first resource and the second resource are allocated to be used by a program;

distances between the computer resources is stored as firmware; and

upon power-up of a system running an operating system, the operating system is provided, from the firmware, with the distances between the computer resources to be used in allocating the first resource and the second resource.

22. (Previously Presented) A system comprising:

firmware embodying distances between resources including a plurality of I/O devices, a plurality of memory, and a plurality of processors; the resources residing in a plurality of resource nodes;

an operating system;

wherein

upon power-up of the system, the operating system uses the distances in the firmware to allocate an I/O device, a memory device, and a processor for use by a program;

a distance between the I/O device to the memory device is the shortest distance among distances between the plurality of I/O devices to the plurality of memory devices;

a distance between the I/O device to the processor is the shortest distance among distances between the plurality of I/O devices to the plurality of processors;

a distance between the memory device to the processor is the shortest distance among distances between the plurality of memory devices to the plurality of processors.

23. (Previously Presented) A system comprising:

a plurality of nodes having resources;

an operating system running on a processor in a node of the plurality of nodes;

firmware embodying relative distances between the plurality of nodes;

wherein, upon power-up, the operating system uses the relative distances between the plurality of nodes in the firmware to allocate resources to be used by a program.

24. (Previously Presented) The system of claim 23 further comprising an interconnect fabric connecting the plurality of nodes; the interconnect fabric includes node-controller chips and cross-bar chips wherein

a node-controller chip connects at least one I/O controller, one memory controller, a plurality of processors and a plurality of crossbar chips; and

a crossbar chip, on a first side, connects to at least a node controller chip, and, on a second side, connects to at least either a crossbar chip or another interconnect chip.

25. (Previously Presented) The system of claim 23 wherein a node of the plurality of nodes includes a node-controller chip connecting at least an I/O controller, a memory controller, a processor, and another node.

26. (Previously Presented) The system of claim 23 wherein a node of the plurality of nodes includes one or a combination of one or more of an I/O controller connected to I/O devices, a memory controller connected to memory arrays, and one or more processors.

27. (Previously Presented) The system of claim 23 wherein a node of the plurality of nodes includes a bus connecting an I/O controller connected to I/O devices, a memory controller connected to memory arrays, a plurality of processors, and a bridge connecting to another node of the plurality of nodes.

28. (Previously Presented) The system of claim 23 wherein an I/O device is first allocated, then a memory array is allocated; a distance between the memory array to the I/O device is the shortest distance among a plurality of distances between a plurality of memory arrays to the I/O device.

29. (Previously Presented) The system of claim 28 wherein a processor is allocated; a distance between the processor to the I/O device is the shortest distance among a plurality of distances between a plurality of processors to the I/O device.

30. (Previously Presented) The system of claim 28 wherein a processor is allocated; a distance between the processor to the memory array is the shortest distance among a plurality of distances between a plurality of processors to the memory array.

31. (Previously Presented) The method of claim 1 wherein the first resource is an I/O device connected to a storage device storing the program or storing data associated with the program.

IX. EVIDENCE APPENDIX

No evidence was submitted pursuant 37 C.F.R. §§ 1.130, 1.131, and/or 1.132, nor was evidence entered by the Examiner and relied upon by the Appellant in the appeal.

X. RELATED PROCEEDINGS APPENDIX

Appellant is unaware of any related proceedings, including appeals or interferences.